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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/398,006 09/16/99 OKAMOTO

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EXAMINER

FISCHER, J

ART UNIT

PAPER NUMBER

1733
DATE MAILED:

03/20/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/398,006

Applicant(s)

OKAMOTO ET AL.

Examiner

Justin R Fischer

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 8-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to because of an error in the numbering of the cords in the innermost layer of the belt 34 in Figure 5. The inner cord layer is labeled 35; however, the individual cords are labeled 25a. It is the examiners belief that the inner cords are supposed to be labeled "35a" because they are referenced to as such in the specification. Correction to the drawing or to the specification is required.

Specification

2. The disclosure is objected to because of the following informalities: Page 4, 2nd Paragraph- the numeral 20 should be changed to --2-- to describe the belt in Figure 1; Page 16, 3rd Paragraph- Figure 2 should be changed to Figure 6; Page 22, 2nd and 3rd Paragraph, the middle cord layer is illustrated as numeral 36, not 37. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-7 rejected under 35 U.S.C. 103(a) as being unpatentable over Kohno (EPO 865,942 A2) and further in view of the admitted prior art (Page 4, 2nd Paragraph), Suzuki (US 5,783,004), Endo et al. (US 4,446,901), and Umezawa (US 5,647,928).

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Kohno teaches the manufacture of a heavy-duty pneumatic tire that consists of a radial carcass, which contains one rubberized ply, extending between a pair of bead cores, each embedded in a bead portion, and a belt comprised of three rubberized cord layers. The reference remains silent with respect to the specific width of the outermost cord layer, the use of one or more circumferential grooves, and any rubber gauge relationship between adjacent belt layers. Both the admitted prior art and Endo et al. suggest the use of circumferential grooves in similar tires containing a radial carcass and a multi-layered belt composed of rubberized plies. Suzuki suggests the use of a wider outermost cord layer in the manufacture of motorcycle tires with multiple belt plies. Umezawa describes the manufacture of pneumatic tires that have the same rubber gauge between cords of adjacent belt layers. It would have been obvious to one of ordinary skill in the art at the time of the invention to design the belt with a wider outermost cord layer, as taught by Suzuki, with circumferential grooves, as described by the admitted prior art and Endo et al., and with equal rubber gauges between cords of adjacent belt layers, as taught by Umezawa, in the manufacture of tires that contain a radial carcass and a three layer belt structure as outlined by Kohno.

Regarding claim 1, Kohno teaches the use of a belt comprised of three rubberized cord layers, of which an innermost and middle cord layer are laminated to form a cross belt layer. The reference further specifies that the innermost and middle cord layer should have an inclination angle within a range of 10-25° and that the outermost cord layer should have an inclination angle within a range of 45-115° (Page 3, Lines 6-10). Though Kohno does not mention any circumferential grooves, both the

admitted prior art and Suzuki suggest their conventional use in similar tires. While describing a conventional tire on page 4 of the specification, the use of circumferential grooves is outlined. Additionally, Endo et al. suggest the inclusion of circumferential grooves in conventional tires (Column 4, Lines 21-25). One skilled in the art at the time of the invention would have appreciated the use of circumferential grooves to assist in wear resistance, traction, and braking performance.

Kohno does not discuss the width of the outermost cord layer in relation to the tread portion of the tire. With respect to claim 1, Suzuki teaches the manufacture of motorcycle tires with three belt plies, such that the outermost cord layer has a strip width from 85 to 105% of the tread width (Column 1, Lines 54-60). If the outermost cord layer has a width equal to or larger than the tread width, as suggested by Suzuki above, it obviously would extend over an outermost groove edge of an outermost circumferential groove. With respect to claim 3 and 4, Suzuki mentions that the outermost ply can have either a larger or smaller strip width than the middle ply (Column 2, Lines 59-65). This suggests that the width of the outermost cord layer is at least 1.0 times the width of the middle cord layer if a larger strip width is selected. The reference fails to quantify the specific width of the outermost cord layer in relation to the width of the middle cord layer.

Regarding claim 2, Kohno describes the use of a coating rubber for the outermost cord layer having a modulus of elasticity of not less than 200 kgf/cm^2 (Page 4, Lines 43-45). Though it does not affect the merits of this claim rejection, it should be noted that there is an inconsistency in this reference. Throughout the specification,

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Kohno indicates that the modulus of elasticity should not be less than 200 **kgf/mm²**.

When looking at the table in this reference, however, the modulus of elasticity has units of **kgf/cm²**. It is the examiners belief that the proper units for the modulus of elasticity in both instances are **kgf/cm²**. By maintaining a high modulus of elasticity, the resistance to buckling is improved and the probability of cords in the outermost layer breaking is reduced.

Regarding claim 5, Kohno fails to discuss the rubber gauge between the cords of the belt layers. Umezawa teaches the manufacture of heavy-duty pneumatic tires, comprising a radial carcass and at least a three-layered belt structure. In this design, the reference outlines the use of the same rubber gauge between cords of the adjacent belt layers (Column 3, Lines 39-40). Though a quantitative relationship between the rubber gauge between the middle and outer cord layers and the inner and middle cord layers is not provided, the use of the same rubber gauge between cords of adjacent belt layers satisfies the claimed relationship of the outer two layers having a rubber gauge at least 0.15 times as large as the rubber gauge between the inner two layers. One skilled in the art at the time of the invention would have appreciated the selection of an appropriate rubber gauge ratio to eliminate separation failure.

With respect to claim 6, Kohno teaches the use of a rubbery material on the end portion of at least one of the innermost cord layer and the middle cord layer to envelop the end portion with an end cover. Furthermore, Kohno describes the wavy profile of the end cover by suggesting that the difference between the mountain and valley is within a range of 0.05-0.25 millimeters (Page 4, Lines 49-56).

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Regarding claim 7, Kohno describes the use of a rubber layer over a full circumference of the cord layer whose width is within a range of 0.05-5.00 millimeters (Page 5, Lines 11-15).


5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is **(703) 605-4397**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7718 for regular communications and (703) 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Justin Fischer

March 19, 2001


Michael W. Ball
Supervisory Patent Examiner
Technology Center 1700